

# Wren™ V Half-Height 5 1/4-inch Disk Drives

Designed for Original Equipment Manufacturers (OEM)

The Control Data Wren V Half-Height is a high-performance, 190-megabyte (formatted) Winchester disk drive with an embedded SCSI controller.

The Wren V Half-Height uses zoned bit recording, which provides more user capacity with fewer heads and disks than conventional recording techniques.

A patented, low-mass, straight-arm rotary voice coil actuator and tri-phase servo positioning (patent pending) help the Wren V Half-Height achieve 18-millisecond average seek. The Wren V Half-Height features both synchronous and asynchronous operation.

Features such as a sealed head/disk assembly with lifetime internal air filtration and humidity control contribute to an outstanding 40,000-hour MTBF.

## Features

- 190 megabytes formatted
- Zoned bit recording
- Supports SCSI Common Command Set
- 15 MHz disk transfer rate (max)
- 4 megabyte synchronous transfer
- 2.5 megabyte asynchronous transfer
- 32 kilobyte data buffer
- 18-millisecond average seek
- Tri-phase servo positioning
- Patented, balanced, low-mass, straight-arm rotary voice coil actuator
- Closed-loop, dedicated servo system
- 40,000-hour MTBF
- Automatic thermal compensation
- Dedicated head landing zone
- Automatic actuator restraint/shipping lock
- Sealed HDA with lifetime internal air filtration and humidity control
- Integral HDA isolation mounts
- Epoxy coated base casting
- Adaptive slimming (patent pending)
- Surface mount electronics
- In-hub spindle motor
- 5 bels or less audible noise
- Vertical or horizontal mounting



NOV 3 1987

CD  
CONTROL  
DATA

You Cannot  
Outdistance  
Control Data

## Product Safety Standards

All Wren family products meet requirements for UL, CSA and VDE certification. Wren drives are supplied as Class A computing devices per FCC rules governing radio frequency and electromagnetic interference.

## Maintenance and Spares

All Control Data products are backed by a comprehensive maintenance and spares support program.

## Repair

Control Data provides a dedicated repair facility for all Wren family products.

## The Wren Family

The Wren family provides a range of models from 48 to 574 megabytes.

Wren II: 48 to 96 MB

—ST506

—ESDI

Wren II HH: 51 MB

—ST506

Wren III: 101 to 182 MB

—ESDI

—SCSI

Wren III HH: 106 MB

—ESDI

—SCSI

Wren IV: 320 MB

—SCSI

Wren V: 344 to 574 MB

—ESDI

—SCSI

Wren V HH: 190 MB

—SCSI

## SPECIFICATIONS

94221-190

### Capacity (Mbytes)

Unformatted	209
Formatted (1024 Bytes/sector)	190

### Configuration

Number of disks	3
Data surfaces	5
Servo surface	1
Tracks per surface	1,547
Recording method	2,7 RLL (ZBR)

### Performance

Rotation speed	3,600 rpm
Average latency	8.33 ms
Seek time	
Single track	4 ms
Average	18 ms

### Interface

Type	SCSI
Transfer rate (Mbytes/sec)	
Asynchronous	2.5 max
Synchronous	4.0 max

### Reliability and Maintainability

Error Rate	
Recoverable	1 in $10^{10}$ bits read, max
Unrecoverable	1 in $10^{12}$ bits read, max
Seek	1 in $10^6$ seeks, max
MTBF	40,000 hours
MTTR	1/2 hour
Preventive maintenance	None
Service life	5 years or 30,000 hours

### Power Requirements

DC	+12 V ( $\pm 5\%$ ) + 5 V ( $\pm 5\%$ )
Power dissipation	Less than 20 watts typical

### Environmental

Temperature	
Operating	10 to 50°C (50 to 122°F)
Storage	-10 to 54°C (14 to 130°F)
Transit	-40 to 70°C (-40 to 158°F)
Relative humidity	
Operating	8 to 80%
Storage	8 to 90%
Transit	5 to 95%
Altitude	
Operating	-300 to 3000 m (-1,000 to 10,000 ft)
Transit	-300 to 12,000 m (-1,000 to 40,000 ft)
Acoustical noise	
Sound power—idle	5.0 bels or less

### Physical

Height	41.28 mm (1.625 in)
Width	147 mm (5.75 in)
Depth	203 mm (8.0 in)
Weight	1.9 kg (4.2 lbs)

Distributed by:

Specifications subject to change without notice.

Control Data sales offices are located in principal cities throughout the world.

 CONTROL DATA

OEM Product Sales  
P.O. Box 0  
Minneapolis, MN 55440 U.S.A.